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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/552,640	10/07/2005	Peter Kammerhofer	64223(52059)	9136
21874 7590 05/19/2008 EDWARDS ANGELL PALMER & DODGE LLP P.O. BOX 55874 BOSTON, MA 02205				
EXAMINER				
CHO, JENNIFER Y				
ART UNIT		PAPER NUMBER		
1621				
MAIL DATE		DELIVERY MODE		
05/19/2008		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary****Application No.**

10/552,640

**Applicant(s)**

KAMMERHOFER ET AL.

**Examiner**

JENNIFER Y. CHO

**Art Unit**

1621

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 January 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) 1-3 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 4-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/CDC)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_
- Paper No(s)/Mail Date \_\_\_\_\_

### Detailed Action

This office action is in response to Applicant's communication filed on 1/28/08.

Claims 1-15 are pending in this application. Claims 1-3 have been withdrawn.

### Claim Rejections - 35 USC 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claim 4 remains rejected under 35 U.S.C. 103(a) as being unpatentable over Link et al. (US 4,798,914).

The instant claims are drawn to a method for the production of vinyl chloride by thermal cracking of 1,2-dichloroethane in a cracking furnace, in which a medium

pressure of from 1.4 to 2.5 Mpa is maintained and an external heatable and regulatable heat exchanger is used.

Link et al. teaches a method for the production of vinyl chloride by thermal cracking of 1,2-dichloroethane in a cracking furnace, in which a medium pressure of from 2.1 to 2.9 Mpa is maintained and an external heat exchanger is used (abstract; column 5, lines 31-33; column 8, lines 19-23; column 10, example 2 lines 6-68; column 11, lines 1-34).

Link et al. is deficient in the sense that it does not teach applicant's exact pressure range

However, it is the position of the examiner that one of ordinary skill in the art, would through routine and normal experimentation determine the optimum pressure range to provide the best effective variable depending on the results desired. Thus it would be obvious in the optimization process, to optimize the pressure range of the reaction through routine experimentation.

Therefore, it would be prima facie obvious to one of ordinary skill in the art, to maintain the appropriate pressure range, with the reasonable expectation that varying the pressure would lower by-product formation, utilize the heat of the reaction for energy conservation, and increase the yield of vinyl chloride. Absent any showing of unusual and/or unexpected results over Link et al.'s process, the claim is deemed to be obvious.

Claims 4-15 remain rejected under 35 U.S.C. 103(a) as being unpatentable over Link et al. (US 4,798,914), in view of Dummer et al. (US 4,822,932).

The instant claims are drawn to a method for the production of vinyl chloride by thermal cracking of 1,2-dichloroethane in a cracking furnace, in which a medium pressure of from 1.4 to 2.5 Mpa, and temperature ranges of 120-150°C, 200-250°C and 450-550°C are maintained, along with an external heatable and regulatable heat exchanger.

Link et al. teaches a method for the production of vinyl chloride by thermal cracking of 1,2-dichloroethane in a cracking furnace, in which a medium pressure of from 2.1 to 2.9 Mpa, and a temperature of 220°C to 275 °C is maintained, along with successive external heat exchangers and burners (abstract; column 5, lines 31-33; column 8, lines 19-23 and 54-56; column 10, example 2 lines 6-68; column 11, lines 1-34).

Link et al. is deficient in the sense that it does not teach applicant's particular temperature range, pressure range or the quench column.

Dummer et al. teaches a method for the production of vinyl chloride by thermal cracking of 1,2-dichloroethane by using a quench column and a heat exchanger, with the temperature ranging from 480° to 540°C, down to 150° to 250°C (abstract).

In regards to the temperature and pressure limitations, it is the position of the examiner that one of ordinary skill in the art, would through routine and normal experimentation determine the optimum temperature and pressure range to provide the best effective variable depending on the results desired. Thus it would be obvious in the optimization process, to optimize the temperature and pressure range of the reaction through routine experimentation.

Therefore, it would be prima facie obvious to one of ordinary skill in the art, to maintain the appropriate temperature and pressure range, and substitute Dummer et al.'s quench column, for Link et al.'s vinyl chloride synthesis, with the reasonable expectation that varying the pressure would lower by-product formation, utilize the heat of the reaction for energy conservation, and increase the yield of vinyl chloride. Absent any showing of unusual and/or unexpected results over Link et al. and Dummer et al.'s processes, the claims are deemed to be obvious. Furthermore, the limitations in some of the dependent claims, not expressly taught in the art, are also deemed to be obvious. One of ordinary skill in the art would be motivated to tweak and optimize these parameters to arrive at the instantly claimed invention.

### **Response to Arguments**

Applicant's arguments have been considered but are not persuasive for the following reasons:

The Examiner acknowledges Applicant's argument that Link et al. does not disclose the use of a heat exchanger which is externally heatable and separately regulatable.

The Examiner contends that Link et al. teaches a method for the production of vinyl chloride by thermal cracking, in which a temperature of 220°C to 275 °C is maintained, along with successive external heat exchangers and burners (abstract; column 5, lines 31-33; column 8, lines 19-23 and 54-56; column 10, example 2 lines 6-

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68; column 11, lines 1-34). Thus the Examiner interprets Link et al.'s teaching to read on Applicant's claims.

The Examiner acknowledges Applicant's argument that the tabular presentations shows advantages of low pressure cracking: high yield, low rate of by-product formation, long operating time of the furnace and low energy consumption. This is shown by the lower total energy consumption of EDC cracking and the refrigeration output for liquefying the hydrogen chloride, which is lower for the present invention.

The Examiner has carefully reviewed the table on page 5 and does not find the results convincing of unexpected results. The total energy consumption of EDC cracking is only 4% lower for the present invention. While the refrigeration output is 61% lower for the present invention, the DE 3440685 reference that the Applicant's reference also has a 64% lower value than the present invention. Thus the Applicant has not distinguished their results as being unexpected, over the prior art.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer Y. Cho whose telephone number is (571) 272 6246. The examiner can normally be reached on 9 AM - 6 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yvonne Eyler can be reached on (571) 272-0871. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jennifer Cho  
Patent Examiner  
Art Unit: 1621

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/SHAILENDRA - KUMAR/  
Primary Examiner, Art Unit 1621



